



Sheet 1 of 4

| | | | | |
|---|--|---|---------------------------------|--------------------------|
| Form PTO-1449 (Modified) | | Department of Commerce Patent and Trademark Office | Atty. Docket No. 27866/39701 | Serial No. 10/697,894 |
| INFORMATION DISCLOSURE STATEMENT | | Applicant Beavo et al. | | |
| | | Filing Date October 30, 2003 | Group 1652 | |

| U.S. PATENT DOCUMENTS | | | | | | | |
|------------------------------|--|-----------------|------------|------|-------|----------|----------------------------|
| *Examiner Initials | | Document Number | Issue Date | Name | Class | Subclass | Filing Date if Appropriate |
| | | | | | | | |

| FOREIGN PATENT DOCUMENTS | | | | | | | |
|---------------------------------|--|-----------------|------------------|---------|-------|----------|-------------|
| *Examiner Initials | | Document Number | Publication Date | Country | Class | Subclass | Translation |
| | | | | | | | Yes No |
| | | | | | | | |

| OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.) | | |
|---|-----|---|
| <i>E8</i> | C1 | Ausubel, et al., eds., <i>Current Protocols in Molecular Biology</i> , 1: 1.7.1-1.7.2 and 9.2.1-9.2.3, John Wiley & Sons, New York (1989) |
| | C2 | Beavo, J.A., "Multiple Isozymes of Cyclic Nucleotide Phosphodiesterase," <i>Advances in Second Messenger and Phosphoprotein Research</i> , 22: 1-38 (1988) |
| | C3 | Beavo, J.A., "Multiple Phosphodiesterase Isoenzymes Background, Nomenclature and Implications", pages 3-15; <i>Cyclic Nucleotide Phosphodiesterases: Structure, Regulation and Drug Action</i> , J. Beavo and Houslay, M.D., Eds.; John Wiley & Sons, Ltd., New York (1990) |
| | C4 | Birnstiel, M.L., et al., "Transcription Termination and 3' Processing: The End Is in Sight!", <i>Cell</i> , 41: 349-359 (1985) |
| | C5 | Bourne, H.R., et al., "Somatic Genetic Analysis of Cyclic AMP Action: Characterization of Unresponsive Mutants," <i>J. Cell. Physiol.</i> , 85: 611-620 (1985) |
| | C6 | Bradford, M.M., "A Rapid and Sensitive Method for the Quantitation of Microgram Quantities of Protein Utilizing the Principle of Protein-Dye Binding," <i>Analytical Biochem.</i> , 72: 248-254 (1976) |
| | C7 | Chen, C-N., et al., "Molecular Analysis of cDNA Clones and the Corresponding Genomic Coding Sequences of the <i>Drosophila</i> dunce ⁺ Gene, the Structural Gene for cAMP Phosphodiesterase," <i>Proc. Nat'l. Acad. Sci. (USA)</i> , 83: 9313-9317 (1986) |
| | C8 | Chomczynski, P., et al., "Single-Step Method of RNA Isolation by Acid Guanidinium Thiocyanate-Phenol-Chloroform Extraction," <i>Analytical Biochem.</i> , 162: 156-159 (1987) |
| | C9 | Colicelli, J., et al., "Isolation and Characterization of a Mammalian Gene Encoding a High-Affinity cAMP Phosphodiesterase," <i>Proc. Nat'l. Acad. Sci. (USA)</i> , 86: 3599-3603 (1989) |
| | C10 | Davis, R.L., "Molecular Genetics of the Cyclic Nucleotide Phosphodiesterases", pages 227-241 in <i>Cyclic Nucleotide Phosphodiesterases: Structure, Regulation and Drug Action</i> , J. Beavo and Houslay, M.D., Eds.; John Wiley & Sons, Ltd., New York (1990) |
| <i>V</i> | C11 | Davis, R.L., et al., "Cloning and Characterization of Mammalian Homologs of the <i>Drosophila</i> dunce ⁺ Gene," <i>Proc. Nat'l. Acad. Sci. (USA)</i> , 86: 3604-3608 (1989) |
| <i>E8</i> | C12 | Devereux, J., et al., "A Comprehensive Set of Sequence Analysis Programs for the |

E. Slobodyaeschley

4/27/06

| | | |
|-----------|-----|--|
| <i>SD</i> | | VAX," <i>Nucleic Acids Res.</i> , 12: 387-395 (1984) |
| <i>SD</i> | C13 | Erneux, C., et al., "A Mechanism in the Control of Intracellular cAMP Level: The Activation of a Calmodulin-Sensitive Phosphodiesterase by a Rise of Intracellular Free Calcium," <i>Mol. Cell. Endocranial.</i> , 43: 123-134 (1985) |
| | C14 | Faure, M., et al., "Disruption of <i>Dictyostelium discoideum</i> Morphogenesis by Overproduction of cAMP Phosphodiesterase," <i>Proc. Nat'l. Acad. Sci. (USA)</i> , 85: 8076-8080 (1988) |
| | C15 | Feinberg, A.P., et al., "A Technique for Radiolabeling DNA Restriction Endonuclease Fragments to High Specific Activity," <i>Analytical Biochem.</i> , 137: 266-267 (1984) |
| | C16 | Greenberg, L.H., et al., "Enzymatic Regulation of the Concentration of Cyclic GMP in Mouse Brain," <i>Neuropharmacology</i> , 17: 737-745 (1978) |
| | C17 | Hansen, R.S., et al., "Differential Recognition of Calmodulin-Enzyme Complexes by a Conformation-Specific Anti-Calmodulin Monoclonal Antibody," <i>J. Biol. Chem.</i> , 261: 14636-14645 (1986) |
| | C18 | Hansen, R.S., et al., "Purification of Calmodulin-Stimulated Cyclic Nucleotide Phosphodiesterase by Monoclonal Antibody Affinity Chromatography," <i>Meth. Enzymol.</i> , 159: 543-557 (1988) |
| | C19 | Hansen, R.S., et al., "Purification of Two Calcium/Calmodulin-Dependent Forms of Cyclic Nucleotide Phosphodiesterase by Using Conformation-Specific Monoclonal antibody Chromatography," <i>Proc. Nat'l. Acad. Sci. (USA)</i> , 79: 2788-2792 (1982) |
| | C20 | Hashimoto, Y., et al., "Regulation of Ca^{2+} /Calmodulin-Dependent Cyclic Nucleotide Phosphodiesterase by the Autophosphorylated Form of Ca^{2+} /Calmodulin-Dependent Protein Kinase II," <i>J. Biol. Chem.</i> , 264: 10884-10887 (1989) |
| | C21 | Henikoff, S., "Unidirectional Digestion with Exonuclease III Creates Targeted Breakpoints for DNA Sequencing," <i>Gene</i> , 28: 351-359 (1984) |
| | C22 | Kincaid, R.L., et al., "Differential Localization of Calmodulin-Dependent Enzymes in Rat Brain: Evidence for Selective Expression of Cyclic Nucleotide Phosphodiesterase in Specific Neurons," <i>Proc. Nat'l. Acad. Sci. (USA)</i> , 84: 1118-1122 (1987) |
| | C23 | Kozak, M., "The Scanning Model for Translation: An Update," <i>J. Cell Biol.</i> , 108: 229-241 (1989) |
| | C24 | Krinks, M.H., et al., "Reversible and Irreversible Activation of Cyclic Nucleotide Phosphodiesterase: Separation of the Regulatory and Catalytic Domains by Limited Proteolysis," <i>Advances in Cyclic Nucleotide and Protein Phosphorylation Research</i> , 16: 31-47 (1984) |
| | C25 | LaPorte, D.C., et al., "Cross-Linking of Iodine-125-Labeled, Calcium-Dependent Regulatory Protein to the Ca^{2+} -Sensitive Phosphodiesterase Purified from Bovine Heart," <i>Biochemistry</i> , 18: 2820-2825 (1979) |
| | C26 | LeTrong, H., et al., "Amino Acid Sequence of the Cyclic GMP Stimulated Cyclic Nucleotide Phosphodiesterase from Bovine Heart," <i>Biochemistry</i> , 29: 10280-10288 (1990) |
| <i>SD</i> | C27 | Livi, G.P., et al., "Cloning and Expression of cDNA for a Human Low- K_m Rolipram-Sensitive Cyclic AMP Phosphodiesterase," <i>Mol. Cell. Biol.</i> , 10: 2678-2686 (1990) |
| <i>SD</i> | C28 | Manganillo, V.C., et al., "Cyclic GMP-Stimulated Cyclic Nucleotide Phosphodiesterases", pages 62-85 in <i>Cyclic Nucleotide Phosphodiesterases: Structure, Regulation and Drug Action</i> , Beavo, J. and Houslay, M.D., Eds.; John Wiley & Sons, Ltd., New York (1990) |
| <i>SD</i> | C29 | Maniatis, et al., <i>Molecular Cloning: A Laboratory Manual</i> , pp 324-328, Cold Spring |

E. Shobody

4/27/06

| | | |
|-----------|-----|--|
| <i>SD</i> | | Harbor Laboratory, Cold Spring Harbor, New York (1982) |
| <i>EJ</i> | C30 | Martins, T.J., <i>et al.</i> , "Purification and Characterization of a Cyclic GMP-Stimulated Cyclic Nucleotide Phosphodiesterase from Bovine Tissues," <i>J. Biol. Chem.</i> , 257: 1973-1979 (1982) |
| | C31 | Nikawa, J.-I., <i>et al.</i> , "Cloning and Characterization of the Low-Affinity Cyclic AMP Phosphodiesterase Gene of <i>Saccharomyces cerevisiae</i> ," <i>Mol. Cell. Biol.</i> , 7: 3629-3636 (1987) |
| | C32 | Nomenclature Committee of the International Union of Biochemistry (NCIUB), "Nomenclature for Incompletely Specified Bases in Nucleic Acid Sequences," <i>J. Biol. Chem.</i> , 261:13-17 (1986) |
| | C33 | Novack, J.P., <i>et al.</i> , "Sequence Comparison of the 63-, 61-, and 59-kDa Calmodulin-Dependent Cyclic Nucleotide Phosphodiesterases," <i>Biochemistry</i> , 30: 7940-7947 (1991) |
| | C34 | Ovchinnikov, Y.A., <i>et al.</i> , "Cyclic GMP Phosphodiesterase from Bovine Retina," <i>FEBS</i> , 223: 169-173 (1987) |
| | C35 | Sanger, F., <i>et al.</i> , "DNA Sequencing with Chain-Terminating Inhibitors," <i>Proc. Nat'l. Acad. Sci. (USA)</i> , 74: 5463-5467 (1977) |
| | C36 | Sass, P., <i>et al.</i> , "Cloning and Characterization of the High-Affinity cAMP Phosphodiesterase of <i>Saccharomyces cerevisiae</i> ," <i>Proc. Nat'l. Acad. Sci. (USA)</i> , 83: 9303-9307 (1986) |
| | C37 | Seed, B., "An LFA-3 cDNA encodes a Phospholipid-Linked Membrane Protein Homologous to Its Receptor CD2," <i>Nature</i> , 329: 840-842 (1987) |
| | C38 | Sharma, R.K., <i>et al.</i> , "Demonstration of Bovine Brain Calmodulin-Dependent Cyclic Nucleotide Phosphodiesterase Isozymes by Monoclonal Antibodies," <i>J. Biol. Chem.</i> , 259: 9248-9254 (1984) |
| | C39 | Sharma, R.K., <i>et al.</i> , "Differential Regulation of Bovine Brain Calmodulin-Dependent Cyclic Nucleotide Phosphodiesterase Isozymes by Cyclic AMP-Dependent Protein Kinase and Calmodulin-Dependent Phosphatase," <i>Proc. Nat'l. Acad. Sci. (USA)</i> , 82: 2603-2607 (1985) |
| | C40 | Sharma, R.K., <i>et al.</i> , "Purification and Characterization of Bovine Lung Calmodulin-Dependent Cyclic Nucleotide Phosphodiesterase," <i>J. Biol. Chem.</i> , 261: 14160-14166 (1986) |
| | C41 | Sherman, <i>et al.</i> , <i>Methods in Yeast Genetics</i> , Cold Spring Harbor Laboratory, Cold Spring Harbor, New York (1986) |
| | C42 | Short, M., <i>et al.</i> , "ZAP: A Bacteriophage λ Expression Vector with <i>in vivo</i> Excision Properties," <i>Nucleic Acids Res.</i> , 16: 7583-7600 (1988) |
| | C43 | Sonnenburg, W.K., <i>et al.</i> , "Molecular Cloning of a Cyclic GMP-Stimulated Cyclic Nucleotide Phosphodiesterase cDNA," <i>J. Biol. Chem.</i> , 266(26): 17655-17661 (1991) |
| | C44 | Stroop, S.D., <i>et al.</i> , "Direct Photolabeling of the cGMP-Stimulated Cyclic Nucleotide Phosphodiesterase," <i>J. Biol. Chem.</i> , 264: 13718-13725 (1989) |
| | C45 | Swinnen, J.V., <i>et al.</i> , "Molecular Cloning of Rat Homologous of the <i>Drosophila melanogaster</i> dunce cAMP Phosphodiesterase: Evidence for a Family of Genes," <i>Proc. Nat'l. Acad. Sci. (USA)</i> , 86: 5325-5329 (1989) |
| | C46 | Tanner, L.I., <i>et al.</i> , "Identification of the Phosphodiesterase Regulated by Muscarinic Cholinergic Receptors of the 1321N1 Human Astrocytoma Cells," <i>Mol. Pharmacol.</i> , 29: 455-460 (1986) |
| <i>EJ</i> | C47 | Thompson, W.J., <i>et al.</i> , "Identification of Type II (Cyclic GMP-Stimulatable) Cyclic Nucleotide Phosphodiesterase (CNPDE) mRNA in Rat Pheochromocytoma Cells (PC12)," <i>FASEB J.</i> , 5(6): A1592 (Abstract No. 7092) (March 1991) |

E. Shely

4/27/06

| | | |
|----|-----|--|
| SJ | C48 | Wang, J.H., et al., "Calmodulin-Stimulated Cyclic Nucleotide Phosphodiesterases", pp. 19-59; in <i>Cyclic Nucleotide Phosphodiesterases: Structure, Regulation and Drug Action</i> , Beavo, J. and Houslay, M.D., Eds.; John Wiley & Sons, Ltd., New York (1990) |
| | C49 | Watson, et al., "An Alternative Procedure for the Synthesis of Double-Stranded cDNA for Cloning in Phage and Plasmid Vectors," pp. 79-88; in <i>DNA Cloning: A Practical Approach</i> , 1 (1985) |
| | C50 | Wilson, R.B., et al., "SRA5 Encodes the Low-K _M Cyclic AMP Phosphodiesterase of <i>Saccharomyces cerevisiae</i> ," <i>Mol. Cell. Biol.</i> , 8: 505-510 (1988) |
| | C51 | Charbonneau, H., et al., "Identification of a conserved domain among cyclic nucleotide phosphodiesterases from diverse species," <i>Proc. Nat'l. Acad. Sci. (USA)</i> , 83: 9308-9312 (1986) |
| | C52 | Trong, H. L., et al., "Amino Acid Sequence of the Cyclic GMP Stimulated Cyclic Nucleotide Phosphodiesterase from Bovine Heart," <i>Biochemistry</i> 1990, 29: 10280-10288 |
| | C53 | Epstein, P.M. et al., "Identification and characterization of a Ca ²⁺ -calmodulin-sensitive cyclic nucleotide phosphodiesterase in a human lymphoblastoid cell line," <i>Biochem. J.</i> , 243:533-539 (1987). |
| | C54 | Pennypacker, K.R. et al., "Expression of Calmodulin-Dependent Phosphodiesterase Calmodulin-Dependent Protein Phosphatase, and Other Calmodulin-Binding Proteins in Human SMS-KCNR Neuroblastoma Cells," <i>Journal of Neurochemistry</i> , 52(5):1438-1448 (1989). |
| J | C55 | Hurwitz, R.L. et al. "Induction of a Calcium/Calmodulin-dependent Phosphodiesterase during Phytohemagglutinin-stimulated Lymphocyte Mitogenesis", <i>J. Biol. Chem.</i> , 265(15):8901-8907 (1990). |
| SJ | C56 | Lerner, Richard L. "Tapping the immunological repertoire to produce antibodies of predetermined specificity", <i>Nature</i> 299(14) 592-596 (1987) |

| | | | |
|---|----------------|-----------------|----------------|
| Examiner | <i>E. Sicc</i> | Date Considered | <i>4/27/06</i> |
| *EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. | | | |